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Hidden behind a screen of trees along Route 1 in Lorton, Va., Fairfax County’s Noman M. Cole, Jr., Pollution Control Plant treats 40 million gallons of wastewater each day. Thousands of commuters and commercial vehicles drive past the plant every day and don’t even realize it. As long as toilets flush, sinks drain, and trucks haul away septic tank waste, the average person doesn’t think about where that stuff goes or how it’s treated. But wastewater treatment plants are on the vanguard of science and engineering, improving the environment and protecting public health.

Just as the plant goes largely unnoticed by the public, graduating chemistry students are often unaware of the career opportunities available in the plant’s environmental monitoring lab. Juan Reyes, environmental monitoring and pretreatment chief for Fairfax County’s wastewater management program, is seeking to change this.

**Internship Benefits Students and Lab**

Reyes reached out to longtime partner George Mason University to create an internship program in the plant’s lab for chemistry and environmental science students. “The idea is to give students in these fields an opportunity to learn about how a real world lab works while gaining analytical experience they can use to become more marketable when they graduate,” said Reyes.

The county and the university have been cooperatively assessing water quality impacts from the plant’s discharge for more than 30 years, and the program was a logical progression of that relationship. “This is just another way for both of us being able to help each other while we help the communities we both serve,” said Reyes. Dr. Greg Foster, the GMU program lead, wants to see the program grow, possibly even adding a research component. “We are very enthusiastic about it. It’s a great opportunity!” he said. Other schools may become involved as the program matures.

The interns help run the lab, and the program provides a mechanism to recruit the top scientific minds for future analyst positions. With six wastewater labs and several drinking water labs in the area, competition is stiff. “I think even if we don’t hire them when they graduate, other utilities in the metro area will benefit since these candidates will be able to readily fill an environmental laboratory analyst position,” Reyes concedes.

Interns are hired as part-time employees and immediately gain valuable experience helping full-time staff conduct standard laboratory analysis for customers such as the U.S. Geological Survey, the county’s stormwater and solid waste management programs, the health and vehicle services departments, and a Chesapeake Bay monitoring program. As the interns become familiar with the instrumentation and earn certifications through rigorous proficiency testing required by the state, they gain more autonomy to perform more involved analytic procedures.

The internship positions are under the county’s work-study program which has no overhead, just straight salary, and the students work a maximum of 20 hours per week. This makes the program very affordable.

**Meet the Interns**

The first two interns in the program, Aveen Aljazrawi and Sharon Becker, are both high-performing chemistry students with very different backgrounds, but neither of them was familiar with wastewater treatment before they saw the internship advertised.

When Aljazrawi was a child in Baghdad, Iraq, a bomb destroyed an apartment complex in her neighborhood. As the dust settled in the street, her family made the difficult decision to leave their home in search of a safer future. Following stints living in Egypt and Maryland, Aljazrawi is completing a chemistry degree at GMU. She has liked chemistry since being introduced to the subject in middle school.
Aljazrawi considered medical school but decided to pursue research instead. “Lab rat, basically,” she jokes. So when she saw the internship posted, she applied, interviewed, and was selected. “I want to have a good résumé when I graduate,” she said. Aljazrawi was aware of climate-related water issues, but “didn’t have a clue” about wastewater treatment.

Aljazrawi was nervous when she started, but the lab staff told her to take her time, ask questions, and offered to help her in any way. “People here are very friendly and helpful,” she said.

She has learned a lot during her three-month rotations at different stations. She started by measuring particles in water at the total suspended solids station. She moved to the total dissolved solids station where she was surprised to see how much material the filter paper captured in water that appeared to be clean. She’s now using acids and bases to test total phosphoration and chemical oxygen demand.

Her firsthand experience working with water samples has opened her eyes to the importance of the wastewater treatment process and sparked an interest in pursuing a career in the public sector. “Nobody thinks about this, to be honest, what the wastewater goes through to get from the plant to the rivers,” Aljazrawi said. “Somehow, we should think about it more often. We should think about what we put in the wastewater.” Aljazrawi plans to continue working in the lab while she completes her master’s degree at GMU. “It’s kind of good for internship pay,” she said.

As a non-traditional student Sharon Becker is in a different place in her life than Aljazrawi. Becker, a Fairfax County native, has held numerous jobs while raising four children. When the Great Recession changed her plans, she enrolled at GMU as a part-time student with an interest in teaching high school. “I love science and I love the idea of giving back to the community,” Becker said. “I also see the need that is so great, to raise the next generation to be thinkers and take their role in protecting the environment, taking care of the planet.”

Becker started in biology but loved her chemistry classes and switched majors. She saw the internship as a way to gain experience that would help her in the classroom later. Like Aljazrawi, she didn’t know much about the wastewater sector, so she joined an association, read publications, and learned about the lab. Does the field gross her out? “No, I’m a mother,” she says with a laugh. “I present it as something I take pride in, especially because I participate in something that’s guarding the community.”

Becker said she was impressed by the level of rigor the lab maintains. “Everyone I’ve interacted with is a professional and takes this very seriously,” she said. She also commends Reyes for giving students an opportunity. “It’s one thing to hear about how you’re supposed to do things in school. It’s another to go in here and do it.” One thing she appreciates is being trusted to sign off on tests where her signature means something. “You’re considered a professional,” she said.

Similar to Aljazrawi, before the internship, Becker hadn’t considered working in a public sector lab. Now she’s having a blast in the lab and participating in educational outreach events for students. “We’ll see where I end up,” Becker says.

Reyes hopes one or both interns will apply for full-time positions as they become available. “I am always energized by the hunger for knowledge that the students in this program bring, but I also see how that drive is contagious and helps to energize even the most seasoned staff,” Reyes said.

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